

## CLAIMS

What is claimed is:

1. An intervertebral disc implant comprising an allogenic or xenogenic disc annulus material that is substantially free of both disc nucleus material and disc endplate material.
2. An intervertebral disc implant according to claim 1 wherein said disc implant consists essentially of allogenic or xenogenic disc annulus material.
3. An intervertebral disc implant according to claim 1 wherein said allogenic or xenogenic disc annulus material comprises a whole disc annulus.
4. An intervertebral disc implant according to claim 1 wherein said allogenic or xenogenic disc annulus material comprises a segment of disc annulus.
5. An intervertebral disc implant according to claim 1 wherein said disc implant further includes allogenic or xenogenic anterior longitudinal ligament material.
6. An intervertebral disc implant according to claim 5 wherein said allogenic or xenogenic anterior longitudinal ligament is attached to said allogenic or xenogenic disc material.
7. An intervertebral disc implant according to claim 5 wherein said allogenic or xenogenic anterior longitudinal ligament includes free ends extending outward from said allogenic or xenogenic disc material.
8. An intervertebral disc implant according to claim 7 wherein the free ends of said allogenic or xenogenic anterior longitudinal ligament are wrapped around said allogenic or xenogenic disc annulus material.

9. An intervertebral disc implant according to claim 7 wherein the free ends of the allogenic or xenogenic anterior longitudinal ligament are secured together.

10. An intervertebral disc implant according to claim 9 wherein the free ends of the allogenic or xenogenic anterior longitudinal ligament are secured together with sutures, staples, or an adhesive.

11. An intervertebral disc implant according to claim 1 wherein said implant comprises more than one piece of allogenic or xenogenic disc annulus material.

12. An intervertebral disc implant according to claim 11 wherein said implant comprises more than one whole disc annulus.

13. An intervertebral disc implant according to claim 11 wherein said implant comprises more than one segment of allogenic or xenogenic disc annulus.

14. An intervertebral disc implant according to claim 11 wherein said implant further comprises at least one piece of allogenic or xenogenic anterior longitudinal ligament.

15. An intervertebral disc implant according to claim 14 wherein said at least one piece of allogenic or xenogenic anterior longitudinal ligament has at least one free end extending outward from said allogenic or xenogenic disc material.

16. An intervertebral disc implant according to claim 3 wherein said whole disc annulus is folded or rolled into a more compact structure.

17. An intervertebral disc implant according to claim 16 wherein said whole disc annulus is cut to facilitate folding or rolling the annulus into a more compact structure.

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18. An intervertebral disc implant according to claim 16 wherein said whole disc annulus is dehydrated after folding or rolling into a more compact structure.
19. An intervertebral disc implant according to claim 16 wherein said whole disc annulus is sutured or glued after folding or rolling into a more compact structure.
20. An intervertebral disc implant according to claim 3 wherein said whole disc annulus is wrapped in a jacket or wrap.
21. An intervertebral disc implant according to claim 20 wherein said jacket or wrap is made of allogenic or xenogenic tissue.
22. An intervertebral disc implant according to claim 20 wherein said jacket or wrap is made of a synthetic material.
23. An intervertebral disc implant according to claim 4 wherein said disc annulus segment is folded or rolled into a more compact structure.
24. An intervertebral disc implant according to claim 23 wherein said disc annulus segment is dehydrated after folding or rolling into a more compact structure.
25. An intervertebral disc implant according to claim 23 wherein said disc annulus segment is sutured or glued after folding or rolling into a more compact structure.
26. An intervertebral disc implant according to claim 4 wherein said disc annulus segment is wrapped in a jacket or wrap.
27. An intervertebral disc implant according to claim 26 wherein said jacket or wrap is made of allogenic or xenogenic tissue.

28. An intervertebral disc implant according to claim 26 wherein said jacket or wrap is made of a synthetic material.

29. A method of augmenting or replacing an intervertebral disc nucleus, said method comprising the steps of:

(a) providing an intervertebral disc implant comprising allogenic or xenogenic disc annulus material that is substantially free of both disc nucleus material and disc endplate material; and

(b) implanting said intervertebral disc implant in an intervertebral disc nucleus space.

30. A method according to claim 29 wherein said intervertebral disc implant consists essentially of disc annulus material.

31. A method according to claim 29 wherein said intervertebral disc implant comprises allogenic or xenogenic disc annulus material that comprises a whole disc annulus.

32. A method according to claim 29 wherein said intervertebral disc implant comprises allogenic or xenogenic disc annulus material that consists essentially of a segment of disc annulus.

33. A method according to claim 29 wherein said intervertebral disc implant further includes allogenic or xenogenic anterior longitudinal ligament.

34. A method according to claim 33 wherein said allogenic or xenogenic anterior longitudinal ligament is attached to said allogenic or xenogenic disc material.

35. A method according to claim 33 wherein said allogenic or xenogenic anterior longitudinal ligament has free ends extending outward from said allogenic or xenogenic disc material.

36. A method according to claim 35 wherein said free ends of said allogenic or xenogenic anterior longitudinal ligament are wrapped around said allogenic or xenogenic disc annulus material.

37. A method according to claim 35 wherein the free ends of the allogenic or xenogenic anterior longitudinal ligament are secured together.

38. A method according to claim 37 wherein the free ends of the allogenic or xenogenic anterior longitudinal ligament are secured together with sutures, staples, or an adhesive.

39. A method according to claim 29 wherein said intervertebral disc implant comprises more than one piece of allogenic or xenogenic disc annulus material.

40. A method according to claim 39 wherein said intervertebral disc implant comprises more than one whole disc annulus.

41. A method according to claim 39 wherein said intervertebral disc implant comprises more than one segment of allogenic or xenogenic disc annulus material.

42. A method according to claim 39 wherein said intervertebral disc implant further comprises at least one piece of allogenic or xenogenic anterior longitudinal ligament material.

43. A method according to claim 42 wherein said at least one piece of allogenic or xenogenic anterior longitudinal ligament has at least one free end extending outward from said allogenic or xenogenic disc material.

44. A method according to claim 31 wherein said whole disc annulus is folded or rolled into a more compact structure.

45. A method according to claim 44 wherein said whole disc annulus is cut to facilitate folding or rolling the annulus into a more compact structure.

46. A method according to claim 44 wherein said whole disc annulus is dehydrated after folding or rolling into a more compact structure.

47. A method according to claim 44 wherein said whole disc annulus is sutured or glued after folding or rolling into a more compact structure.

48. A method according to claim 31 wherein said whole disc annulus is wrapped in a jacket or wrap.

49. A method according to claim 48 wherein said jacket or wrap is made of allogenic or xenogenic tissue.

50. A method according to claim 48 wherein said jacket or wrap is made of a synthetic material.

51. A method according to claim 32 wherein said disc annulus segment is folded or rolled into a more compact structure.

52. A method according to claim 51 wherein said disc annulus segment is dehydrated after folding or rolling into a more compact structure.

53. A method according to claim 51 wherein said disc annulus segment is sutured after folding or rolling into a more compact structure.

54. A method according to claim 32 wherein said disc annulus segment is wrapped in a jacket or wrap.

55. A method according to claim 54 wherein said jacket or wrap is made of allogenic or xenogenic tissue.

56. A method according to claim 54 wherein said jacket or wrap is made of a synthetic material.

57. A method of plugging a hole in an intervertebral disc annulus, said method comprising the steps of:

(a) providing an intervertebral disc implant comprising allogenic or xenogenic disc annulus material; and

(b) implanting said intervertebral disc implant in a hole in an intervertebral disc annulus to plug said hole.

58. A method according to claim 57 wherein said intervertebral disc implant consists essentially of disc annulus material.

59. A method according to claim 57 wherein said allogenic or xenogenic disc annulus material comprises a whole disc annulus.

60. A method according to claim 57 wherein said allogenic or xenogenic disc annulus material comprises a segment of disc annulus.

61. A method according to claim 57 wherein said intervertebral disc implant further comprises allogenic or xenogenic anterior longitudinal ligament.

62. A method according to claim 61 wherein said anterior longitudinal ligament is attached to said allogenic or xenogenic disc material.

63. A method according to claim 61 wherein said anterior longitudinal ligament has free ends extending outward from said allogenic or xenogenic disc material.

64. A method according to claim 63 wherein the free ends of said allogenic or xenogenic anterior longitudinal ligament are wrapped around said allogenic or xenogenic disc annulus material.

65. A method according to claim 63 wherein the free ends of the allogenic or xenogenic anterior longitudinal ligament are secured together.

66. A method according to claim 65 wherein the free ends of the allogenic or xenogenic anterior longitudinal ligament are secured together with sutures, staples, or an adhesive.

67. A method according to claim 57 wherein said intervertebral disc implant comprises more than one piece of allogenic or xenogenic disc annulus material.

68. A method according to claim 67 wherein said intervertebral disc implant comprises more than one whole disc annulus.

69. A method according to claim 67 wherein said intervertebral disc implant comprises more than one segment of allogenic or xenogenic disc annulus material.

70. A method according to claim 67 wherein said intervertebral disc implant further comprises at least one piece of allogenic or xenogenic anterior longitudinal ligament material.

71. A method according to claim 70 wherein said at least one piece of allogenic or xenogenic anterior longitudinal ligament has at least one free end extending outward from said allogenic or xenogenic disc material.

72. A method according to claim 59 wherein said whole disc annulus is folded or rolled into a more compact structure.

73. A method according to claim 72 wherein said whole disc annulus is cut to facilitate folding or rolling the annulus into a more compact structure.

74. A method according to claim 72 wherein said whole disc annulus is dehydrated after folding or rolling into a more compact structure.

75. A method according to claim 72 wherein said whole disc annulus is sutured or glued after folding or rolling into a more compact structure.

76. A method according to claim 59 wherein said whole disc annulus is wrapped in a jacket or wrap.

77. A method according to claim 76 wherein said jacket or wrap is made of allogenic or xenogenic tissue.

78. A method according to claim 76 wherein said jacket or wrap is made of a synthetic material.

79. A method according to claim 60 wherein said disc annulus segment is folded or rolled into a more compact structure.

80. A method according to claim 79 wherein said disc annulus segment is dehydrated after folding or rolling into a more compact structure.

81. A method according to claim 79 wherein said disc annulus segment is sutured after folding or rolling into a more compact structure.

82. A method according to claim 60 wherein said disc annulus segment is wrapped in a jacket or wrap.

83. A method according to claim 82 wherein said jacket or wrap is made of allogenic or xenogenic tissue.

84. A method according to claim 82 wherein said jacket or wrap is made of a synthetic material.

85. An intervertebral disc implant according to claim 1 wherein said implant comprises a segment of disc annulus that has been straightened to provide a substantially rod-shaped implant.

86. An intervertebral disc implant according to claim 85 wherein said substantially rod-shaped implant has at least one end with a reduced diameter.

87. An intervertebral disc implant according to claim 85 wherein said substantially rod-shaped implant has at least one end that is substantially pointed.

88. An intervertebral disc implant according to claim 85 wherein said substantially rod-shaped implant is subjected to forces that move the surface of the implant radially inward to provide an implant having a diameter less than the diameter of the segment of disc annulus before it is subjected to said forces.

89. An intervertebral disc implant according to claim 88 wherein said substantially rod-shaped implant is dehydrated after being subjected to forces that move the surface of the implant radially inward to provide a dehydrated implant having a diameter less than the diameter of the hydrated segment.

90. An intervertebral disc implant according to claim 89 wherein said dehydrated implant has at least one end with a reduced diameter.

91. An intervertebral disc implant according to claim 89 wherein said dehydrated implant has at least one end that is substantially pointed.

92. A method according to claim 29 wherein said intervertebral disc implant comprises a segment of disc annulus that has been straightened to provide a substantially rod-shaped implant.

93. A method according to claim 29 wherein said substantially rod-shaped implant has at least one end with a diameter that is reduced from its original diameter.

94. A method according to claim 29 wherein said substantially rod-shaped implant has at least one end that is substantially pointed.

95. A method according to claim 29 wherein said substantially rod-shaped implant is subjected to forces that compress the implant radially inward to provide an implant having a diameter less than the diameter of the segment of disc annulus before it is compressed.

96. A method according to claim 95 wherein said dehydrated implant has at least one end with a diameter that is smaller than the diameter of the remainder of the implant.

97. A method according to claim 95 wherein said dehydrated implant has at least one end that is substantially pointed.

98. A method according to claim 95 wherein said substantially rod-shaped implant is dehydrated after being compressed.

99. A method according to claim 98 wherein said dehydrated implant has at least one end with a diameter that is smaller than the diameter of the remainder of the implant.

100. A method according to claim 98 wherein said dehydrated implant has at least one end that is substantially pointed.